

INTRODUCTION

On August 11, 1994, with the purchase of 86 acres, Canaan Valley National Wildlife Refuge (Refuge) was established. Currently, the Refuge is approximately 16,000 acres in size. The Canaan Valley area is a large high elevation wetland surrounded by forested upland slopes that is well known for its unique assemblage of plants and habitats. Canaan Valley, contains the headwaters of the Blackwater River, and extensive peatlands and shrub swamps, and represents the diversity and abundance of State and regionally rare plants and communities found in surrounding smaller wetlands of the Allegheny Plateau highlands.

The Refuge supports a diversity of wildlife in forest, meadow, riparian and wetland habitats. A total of 286 species of fishes, amphibians, reptiles, mammals and birds are known or expected to occur in the Canaan Valley. Much of the wildlife is typical of the West Virginia-Pennsylvania highlands border region. Commonly observed species include white-tailed deer, raccoon, black bear and Canada goose. However, the high elevation and large amount of wetlands provide habitat for some species more typical of northern latitudes such as the fisher, saw whet owl and Wilson's snipe. The land is managed and protected to maintain biological diversity and to protect and benefit threatened and endangered species and resident and migratory birds. The Refuge provides habitat for two threatened and two endangered species. Threatened species include the Cheat Mountain salamander and the bald eagle. Endangered species include the West Virginia northern flying squirrel and the Indiana bat.

More than 20,000 people per year visit the Refuge to participate in a variety of wildlife dependent recreational and educational activities. These include wildlife observation, photography, interpretation, environmental education, hunting and fishing. A 31-mile road and trail system and Visitor Center support these activities.



View of the Valley (2003, K.S.).

A. Highlights

Some of the few highlights at Canaan Valley National Wildlife Refuge this year:

- 1st Fish and Wildlife clinic drew 85 fifth graders from local schools. (Section H.7).
- Fieldwork for the Refuge vegetation map completed. (Section F.1).
- Construction was completed on a new audio/visual room. (Section I.2).
- Construction of a long awaited maintenance facility was completed. (Section I.1).
- The Indiana Bat was documented for the 2nd time on the Refuge. (Section G.2).
- The first documented occurrence of Henslow's sparrows in Canaan Valley and the other second site location known in Tucker County occurred on the Reichle tract (Section G.7).
- Aspen was cut to promote regeneration for woodcock management. (Section G.7).
- Hunt program issued over 1600 permits. (Section H.8).



Henslow Sparrow on Refuge (J.R.).

Indiana Bat (FWS IMAGE).

B. Climatic Conditions

The weather in Canaan Valley in 2005 can be characterized simply as very near normal. Of course, there were a few brief periods when conditions departed somewhat from the norm, but taken as whole, both temperatures and precipitation overall came very close to normal for the entire twelve months.

With a mean annual temperature of 46F, the year exactly equaled the normal reading of 46F, the seventh year in a row here with normal or cooler than normal temperatures.

Despite the year's overall normalcy, March and December stand out as sharply colder than normal. In fact, March's mean temperature was no warmer than January's was, quite remarkable in view of spring's rapidly lengthening days and high sun. Cold temperatures in March also

contributed to more than 54 inches of snow in Canaan Valley, making it the fifth snowiest March in the last 50 years. December was likewise unusually cold and snowy. With 35 inches of snow and a mean temperature of 23F, there have only been five other Decembers in the past 50 years that were colder. The lowest temperature of the year was on January 28 when a reading of -12F was recorded at the official Canaan Valley weather station operated by local resident Kenny Sturm.

The warm season from May to September brought temperatures close to normal. The closest that Canaan Valley came to a heat wave this summer, if one can call it that, was a two-week stretch in early August when the daily high temperature hit 80F or higher on nine days. The warmest day of the year was recorded during that period with a reading of 85F on Aug 14.

Precipitation in 2005 totaled 54.63 inches, less than an inch greater than the normal annual precipitation of 53.79 inches. It was the sixth year in a row with normal or higher than normal precipitation in Canaan Valley. Although the entire year hit the target of normal precipitation, there were three moisture regimes over the twelve months. The first was a long wet spell from January to May during which precipitation was 6 inches above average. Then that pattern reversed itself from June to September when a shortfall of more than 6 inches of moisture occurred. That summer dry spell caused some stress on crops and pasture and was even responsible for a scattering of dry wells. Finally, during the final three months of the year Canaan Valley's precipitation rebounded, bringing relief to the summer's drought.

While Canaan Valley is well known for its cool, wet climate, it's best known for its snowfall. 2005 was no disappointment in that regard. The year's snowfall totaled 186 inches, more than four feet greater than the normal annual total of 137 inches. In addition to the memorable amount of March snowfall mentioned earlier, Canaan Valley also received snowfall totals in February, April, October, and December that were modestly greater than normal. The snowfall season went out with a bang when 11 inches of wet snow fell on the unusually late date of Apr 24-25, and resumed just six months later with equal fanfare: with a 9-inch snowfall on October 25-26.

C. Land Acquisition

1. Fee Title

Allmans – In January, RM Skutek met with Realty Officer (RO) Rick Jorgensen to inspect Tract 100c adjacent to the Ruth Allman property. Tract 100c, referred to as “the boot of Italy”, is still owned by Allegheny Power (Allegheny) and will be acquired by the Refuge after issues are worked out between Allmans and Allegheny. The Allmans sold this land to Allegheny in the 1960's. At that time Canaan Valley was going to be flooded as part of a power project. When that did not happen, the Allman family continued to occupy Allegheny's land and graze their cattle. Now, the Service is negotiating with Allegheny to acquire this parcel. RO Jorgensen has been negotiating with Ruth Allman and her sons, Tom and Rich and Allegheny Realty Officer Kevin Phillips to parcel out a portion of this property so that the Allmans can still graze and water their cattle.

Approximately 10 acres will be removed from the parcel and an area delineated where cattle watering access could be permitted. RO Jorgensen, RM Skutek, and DRM Holmes

have discussed with the Allmans an area where the Refuge could allow watering access after the Refuge acquires the parcel. RO Jorgensen and RM Skutek flagged the area, however, Rich and Tom Allman were not in agreement and want to see the area expanded. The Refuge will continue to work with the Allman family and come to some agreement. The Refuge and RO Jorgensen are also coordinating with the Private Lands Program (Elkins ES Office) to provide assistance for fencing that the Allmans are required to provide (after Refuge acquisition) to keep their cattle out of the wetland on Refuge property.

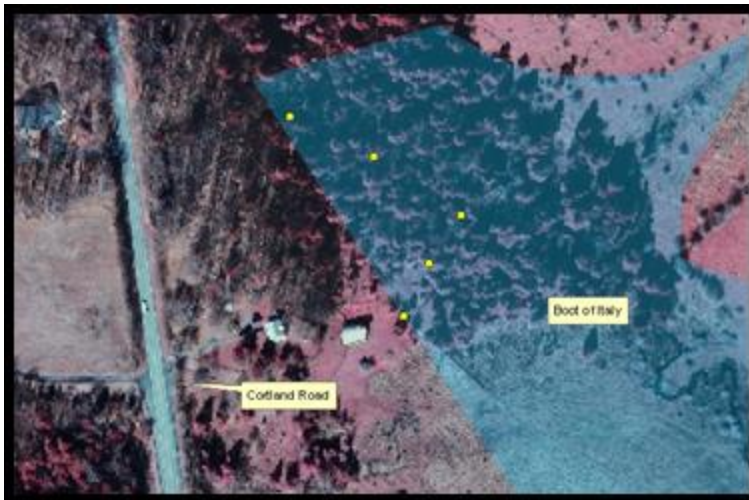


Figure 1: Map of "boot of Italy"; yellow dots represent possible bulge in fencing to allow for cattle access to water.

Orders- RM Skutek met with RO Jorgensen and Rodney Bartgis and Tom Minney of The Nature Conservancy (TNC) in Elkins to discuss Bob Orders' property adjacent to Refuge Tract 107. We discussed possible future willing seller negotiations including fee title and various easements. Bob Orders has expressed interest in working with FWS to manage and protect his property. It was felt that a conservation easement could provide adequate protection and at the same time, be more palatable (for the County Commissioners) than fee simple purchase.

Other- In February, RM Skutek and DRM Holmes met with staff of the Tucker County Assessors Office to resolve some disputed Refuge acreage. It appeared that the County was carrying TNC lands as Refuge lands. This issue was resolved.

3. Other

On March 22nd, RM Skutek meet with Realty Officer Rick Jorgensen, Ray Herndon, VA/WV Real Estate Associate of The Conservation Fund (TCF), Nick Dilks ,VP, Real Estate (TCF), and Dan Sakura, Director of Government Relations and Assistant General Counsel (TCF) to discuss the possibility of TCF facilitating the acquisition of the two major unacquired, priority properties at the northern and southern extremes of CVNWR Refuge (Western Pocahantas and Brian Black properties). The meeting took place at TCF headquarters in Arlington, Virginia. Afterwards, RO Jorgensen and RM Skutek met

with Rodney Bartgis (TNC-Elkins), Thomas Cassidy (TNC-Arlington), Franz Wuerfmannsdobler and Carol Wallace (Senator Byrd's office) to brief them on land acquisition and conservation easement opportunities in the Valley.

RM Skutek and Biologists Sturm and Ceperley flagged a proposed route for a future gas Right-Of-Way on Tract 107 (Orders). The R.O.W. is identified by deed of sale. Refuge staff worked with Canaan Gas Co. (Arden Swecker) in identifying several potential pipeline routes. Pipeline routes may be used in future, depending on needs of adjacent landowner (Bob Orders). Approximately 950 feet of pipeline was laid along the northerly running fence (on Refuge property) adjacent to Black Bear Woods Development.

RM Skutek has been communicating with Timberline Homeowners Association on a parcel of land that Timberline claims is theirs. The 2.437 acre parcel is located at the extreme SE corner of Tract 50 east of the Blackwater River and in vicinity of Yokum Run. Timberline has been paying property taxes on this lot and they have a deed they believe shows that the lot was passed to Allegheny Properties Inc. prior to Allegheny Power's sale to FWS. The Refuge's deed shows that when Allegheny Power sold FWS Tract 50, the lot in question was included. FWS has the senior deed and contends that the lot is on FWS land. The Refuge received a letter from the president of Timberline Homeowners Assn. (dated December 9, 2005) requesting that the Refuge remove "their" boundary signs from the lot. RM Skutek asked the Region 5 Division of Realty (Bob Hillis) to look into this and provide a resolution so the Refuge can respond back to Timberline. FWS contracted with Woolpert Inc. to research the deed back far enough to show the chain of transfers. The final report is pending and we expect to provide information to Timberline in very near future.

There has been no action this year relative to a potential trade of Refuge lands for lands along Cortland Road owned by developers Henry Moomau and Gary Dahm. Congressman Mollohan's Office is kept apprised of this issue by Realty Officer Rick Jorgensen.

D. Planning

1. Master Plan

The first Comprehensive Conservation Plan conference call occurred on December 12th. Pre-planning and information gathering was discussed. A tentative plan for a visit from USGS was also discussed. RM Skutek, DRM Holmes and RB Sturm attended the conference call.

5. Research and Investigations

White-tailed deer Herbivory on Rare Wetland Plants in Canaan Valley, WV

Kelley Flaherty (WVU) began her PhD research on the Refuge during 2005. The project was to study deer densities, browse pressure and damage on wetland plant species and evaluate public perceptions of deer management on a National Wildlife Refuge. Particular attention was given to browse pressure on rare plant species such as Jacob's ladder (*Polemonium vanbruntiae*). Flaherty also began to use spot lighting to count deer numbers along transects on the Refuge. Counts were made monthly throughout the year.

Flaherty established a total of 132 vegetation plots on the Refuge in 2005. Sixty-six of these were reference plots. An additional 66 were protected from deer browse for all or part of the year by 2m by 2 m fenced exclosures. Plots were established in 10 *Solidago-Rubus* (goldenrod – dewberry) communities and in 4 aspen regeneration cuts. Plots were monitored for species composition and browse in mid June and early October of 2005. Seventy-eight plant species were found in the combined plots.

Nine populations of Jacob's ladder were found, delineated and monitored in 2005. In small populations, all flowering stems were counted and marked with both a numbered stake and with blue tape above the stem. Measurements included the height of the flowering stem, the diameter of the stem at the base, the number of flowers present and the number of seed pods formed at specific sampling dates. Stems were monitored every three weeks for signs of browse from late May until September 2005. Populations were delineated using a handheld Trimble GPS in the field and a shapefile was developed for GIS work (*Polemonium_2005.shp*). Table 1 shows browse pressure on Jacob's ladder plots during the 2005 field season.

Table 1. Percent of Jacob's ladder flowering stems browsed. a represents populations with all flowering individuals monitored. b represents populations where random samples of flowering individuals were monitored.

Population ID		# Monitored	# Browsed	% Browsed	Area (m ²)
1	State Park Pop A	13 _a	9	69	107.32
2	State Park Pop B	13 _a	4	31	408.43
3	State Park Parking Lot	50 _b	32	64	156.16
4	Abes Run	50 _b	13	26	19225.71
5	A- Frame	14 _a	7	50	59.25
6	Cortland Pop A	35 _b	11	31	2542.91
7	Cortland Pop B	26 _b	11	42	3245.00
8	Camp 70 Pop A	25 _b	7	28	442.02
9	Camp 70 Pop B	50 _b	19	38	795.49

Established enclosures will continue to be monitored twice per year in 2006. Flaherty will sample again in early June but fall sampling will take place in early to mid-September in 2006 to ensure plots are sampled before the first frost.

Beaver Influence on Vegetation and Habitat Modeling

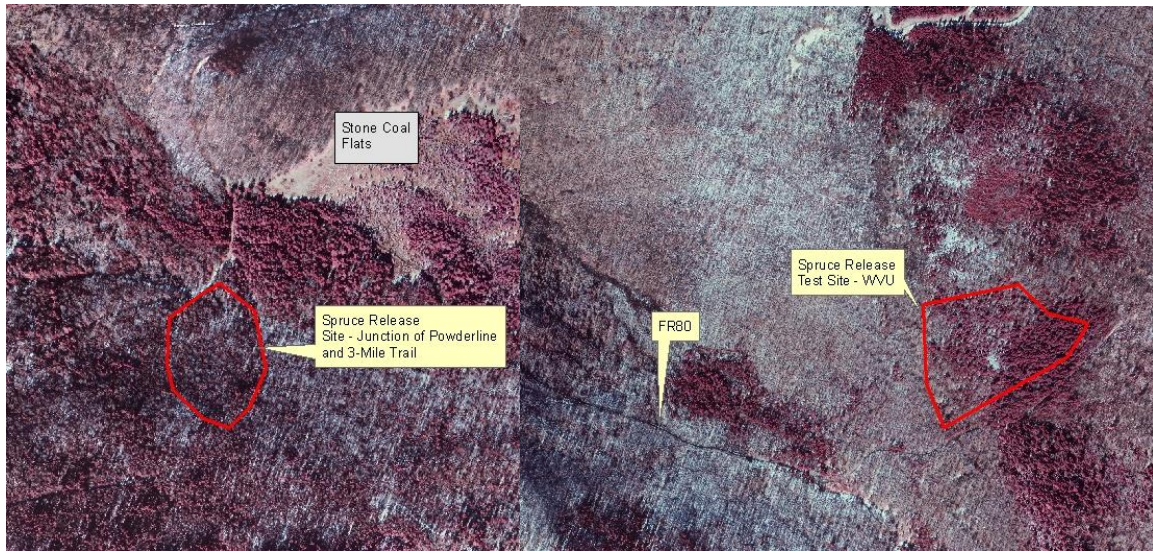
LeAnne Bonner (WVU) worked on completing her thesis project on beaver habitat use and distribution on the Refuge during June and July. Her final field work included vegetation surveys around beaver ponds and documenting active ponds throughout the summer. RB Sturm provided Bonner with GIS layers including a vegetation height model to aid in analysis of vegetation communities adjacent to active and inactive beaver ponds on the Refuge.

The Refuge received LeAnne Bonner's master's thesis titled "The Influence of Beaver Impoundments on Vegetative Composition, and Modeling Habitat Suitability as a Tool for Wildlife Management and Conservation". Bonner studied rare plant communities and beaver habitat on the Refuge during 2004-2005 which included a limited telemetry study. The report will provide the Refuge with information regarding locations of rare plant communities in relation to beaver activity and potential impacts of beaver flooding to these communities.

Red Spruce Release

Jim Rentch (WVU), Tom Schuler (USFS) and Mark Ford (USFS) submitted a request to evaluate a red spruce release project on the Refuge. The project was approved and initial plot marking was undertaken by the researchers in October. The goal of the project is to allow understory red spruce attain the canopy through selective girdling of neighboring northern hardwood canopy species. The results of releasing suppressed red spruce trees will accelerate spruce stand recruitment and development on the Refuge. Habitat for threatened Cheat Mountain salamanders and northern flying squirrels should be improved by increasing the overstory spruce in the forest.

Plots located on the north side of Forest Road 80 on the Kelly-Elkins Tract were marked in October. Understory spruce trees were identified in the plots and hardwood species nearby were flagged for herbicide treatment. The herbicide will be injected into the trunk which will allow the dead tree to remain for potential squirrel den sites. Field work is expected to take place during 2006.



Spruce release plots for West Virginia University/USFS research project on CVNWR – 2/2006 (K.S.)

Cheat Mountain Salamander

Undergraduate student Crissa Cooley from WVU submitted a research report to the Refuge for work conducted during the fall of 2005. The paper is titled “Population Estimate and Distribution of the Cheat Mountain Salamander (*Plethodon nettingi*) in the Southern Portion of Canaan Valley National Wildlife Refuge.” Cooley’s project analyzed plant communities in known occupied habitat of *P. nettingi* and compared them to randomly selected habitats on the Kelly-Elkins Tract. Area searches were conducted to identify salamander populations and develop estimates of population density. Cooley’s results found one Cheat Mountain salamander and 19 red-backed salamanders (*Plethodon cinereus*) with approximately 47 work hours logged on the project. An estimate of one Cheat Mountain salamander for every 841, 750 m² was made on the Kelly-Elkins Tract based on her survey results.

Les Dillard, a graduate student from University of Wisconsin, visited the Refuge to discuss a potential Cheat Mountain salamander research project. Dillard was accompanied by USFS Research Biologist Mark Ford who will be the primary contact for Dillard during his research. The Refuge is interested in the potential impact of logging roads on Cheat Mountain salamander habitat. Previous work conducted by Dr. Tom Pauley (Marshall University) suggests that roads and even foot trails fragment occupied habitat and prevent dispersal of this salamander species. RB Ceperley sent Dillard GIS data to help begin the process of habitat evaluation. Dillard will return to Canaan Valley during the 2006 field season to begin his research. The Refuge will provide housing during his field work during the summer.

Monitoring Migratory Birds – Remote Recording

RB Sturm worked with FWS Biologist Tim Jones and USGS Research Biologist Deanna Dawson to establish an experimental avian recording device on the Beall Tract. The device includes two directional microphones with a MP3 recorder installed in a PVC mounting case. The device will attempt to record call notes from birds migrating across

Canaan Valley to document species movement patterns over the Allegheny plateau. The purpose is to gather baseline information to evaluate potential risk of proposed wind power stations in the surrounding area to migrating bird species.

The recorder was removed at the end of fall migration and analyzed by Cornell University. Information will help biologists evaluate flyways for migratory birds in relation to proposed wind farm development on the Allegheny Front. Additionally, the Refuge will gain information about what species migrating through Canaan Valley and the timing of migration for species and species groups.

Other Refuge Projects

RB Crockett developed a database to store rare plant survey information for the Refuge. This data will be integrated into a GIS to help future habitat management planning. RB Crockett worked with The Nature Conservancy, West Virginia Division of Natural Resources and West Virginia University to gather all available site data for rare plant records in Canaan Valley. This database and GIS layer would be an excellent resource for developing a monitoring/reconnaissance project to evaluate changes in these plant communities over time.

RB Crockett completed a slide and digital image database. This will be used as a method to catalog Refuge images for use in presentations and reports. STEP Dzack began entering slides into the new database. Protocol for digital images will be developed for accurate logging into the new database.

RB Sturm began communicating with Ron Rothschadl, Northeast Region Web and ARS Manager, to help develop an online Refuge Hunt Permit and database system. The Refuge hopes to have a web based system ready for the 2006 deer hunting season.

E. Administration

1. Personnel:

In March, Administrative Office Assistant Karen Jenkins left CVNWR for a new position with the Natural Resource Conservation Service in Raleigh, NC. RM Skutek asked the WV Field Office in Elkins if they could provide administrative assistance to the Refuge until we filled the position left vacant by Jenkins. Office Assistant Sheila Davis provided the much needed administrative assistance through mid-May. Stacey Pacheco (Regional Office Administrative Assistant) was then detailed to the Refuge to fill in after Sheila. Stacey's details ran May 9 through May 20 and June 6 through June 17.

After consulting with Refuge Supervisor John Stasko, RM Skutek made the decision not to fill the vacant administrative position. Both Stasko and RM Skutek agreed that administrative complexing with Ohio River Islands NWR would provide more flexibility in a base budgeting climate. Thus, major administrative duties were assigned to Administrative Assistant Cindy Bloomer at Ohio River Islands NWR. Cindy's primary duties include, budget tracking, paying bills, time & attendance, travel authorizations, and

general administrative assistance. This arrangement is working quite well and AA Bloomer has been very responsive to the Refuge's administrative needs. The down side is that the Refuge staff was still burdened with answering phone calls, credit card management, and the hunt permit program which took up tremendous staff time. RM Skutek and DRM Holmes were spending a large part of their time doing office support work. In August, a decision was made to hire an Office Automation Clerk (GS-4) to provide the on-site support that could not be provided from Ohio River Islands NWR. The position was advertised via CARES and several veterans appeared on the Delegated Examiner's Certificate (DEU). RM Skutek selected a veteran for the position, however, just prior to being separated from Army Reserve duty, the veteran's unit was re-activated and sent back to Iraq. RM Skutek contacted the remaining veterans on the DEU and found that they were no longer interested in the job. Finally, on October 28th, RM Skutek selected Betty Jo Feather to fill the position. Due to a long administrative delay caused by a backlog of pending background investigations, the Refuge was told that the position would probably not be filled until early 2006.

On December 31st, 2004, Engineering Equipment Operator Tom Gardner retired from FWS after 30 years of government service.

On May 1st 2005, Engineering Equipment Operator John Nicely entered on duty from Eastern Neck NWR, Maryland.

In June STEP employee Amy Dzaack entered on duty. Dzaack was trained about the U.S. Fish and Wildlife Service, the National Wildlife Refuge System, Visitor Center duties and the dragonfly survey project. Throughout the summer she was introduced to various aspects of Refuge operations. In the end, she helped mostly with Visitor Center operations and dragonfly surveys. She continued staffing the Visitor Center on weekends once school started. This has enabled us to keep the Visitor Center open on many days when it would otherwise be closed. We recommend that this program be continued to help with visitor center staffing challenges.

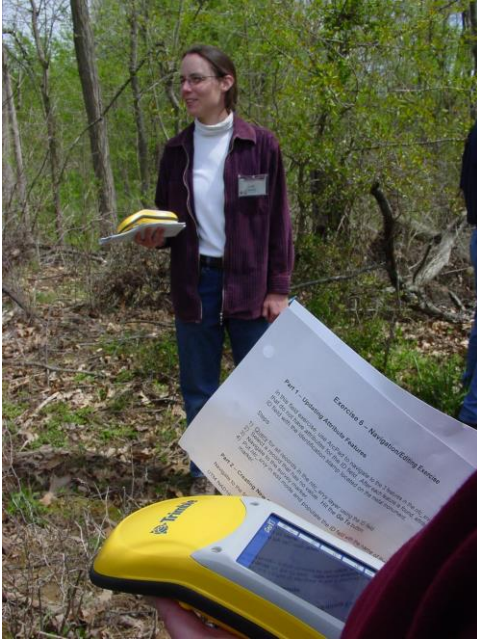


STEP Dzaack helps post signs on trails. (07 / x / 05, E.H.).

PR Burns attended CCP training with RM Skutek, DRM Holmes, Lead RB Sturm and RP Zinni. We are beginning pre-planningThe Refuge hired a GS-7 term wildlife biologist position this year. RB Sturm and DRM Holmes began reviewing the applicants and made a selection in June. Marquette Crockett was hired and started work at the Refuge on July 10. Primary projects for RB Crockett will be to develop a rare plant GIS layer for Refuge planning purposes, develop forest inventory protocol for the 2006 field season and provide support for both the biological program and environmental education program.

RB Ceperley was given a STAR award in July for her exceptional performance over the past year of her employment with the Refuge.

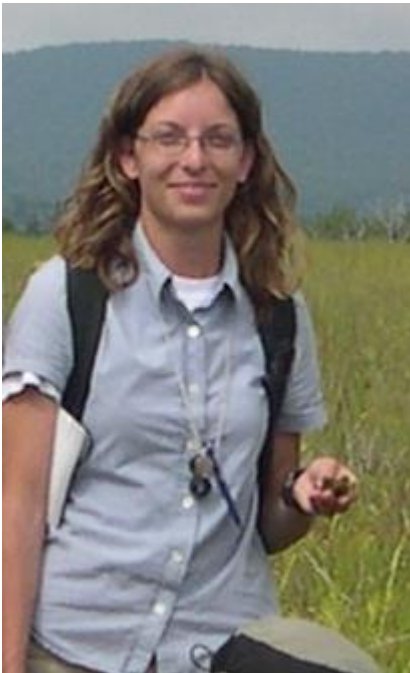
RB Ceperley was requested to act as an instructor for GIS related courses at NCTC this year. Ceperley attended a course at NCTC geared to develop teaching skills and subsequently taught two classes on GIS during FY 05. Courses taught were GIS Design for Natural Resource Lands Management and GPS Advanced Applications for Natural Resources.



RB Ceperley teaching GPS course at NCTC 4/2005 (T.S.)

Contracts:

Two contract positions were hired in 2005. Anna Galik was hired for the field season to work on the Refuge vegetation mapping project. A description of Galik's duties is found in section F.6.- Other Habitats.



Vegetation monitoring contract biologist Anna Galik-7/2005 (E.B.)

Kelly Warren was hired as a contractor to work on the Refuge's GIS data. A description of Warren's duties is found in section E.8. – Other Items.

Internships:

Davis and Elkins College student Liz Salsbury was hired during the 2005 field season as an intern for the biological program. A description of Salsbury's field work is described in section H 4 – Interpretive Foot Trails.

3. Other Man Power Programs

For ten weeks, from January 12th through the end of March, the Refuge public use program hosted an intern from D&E College. Liz Salsbury learned about the Refuge, and then shared that knowledge with visitors to White Grass Ski Touring Center. (Approximately half of White Grass' trails are on the Refuge. They operate with a Refuge Special Use permit.) Salsbury developed three public programs, and offered them a total of nine times. A total of 78 people attended Salsbury's programs. In "Under the Ice" she led program participants in an exploration of stream life. For "Life in the Cold" she discussed how animals adapt to the winter. In "Climate Change in a Cold World" she discussed what studies have told us about the changing climate. In all of the programs she encouraged participants to become responsible stewards of the environment. She wrote descriptions of the programs, and put reference materials in a binder so that others could offer the programs at a later date. She also spent time roving, and talking about the Refuge with over 65 visitors. The internship was successful. It was beneficial to have Salsbury in the field, promoting the Refuge. The biggest challenge was that after the first few weeks her classes were back in session, so she had to balance the needs of her classes with the requirements of this internship. For this reason, it is recommended that future interns be taking a semester break from classes.



Intern Liz Salbury presents program to group. (3 / x / 05, unknown)

The following summer and fall Salsbury worked with RB Sturm to complete her senior project by helping to monitor changing trail conditions.

4. Volunteer Program

RB Sturm coordinated with Connecticut middle school teacher Chris Jones to work on the Refuge for two weeks during July. Jones was working with researchers and scientists to gain an advanced teaching degree in science. As a volunteer for the Refuge, Jones worked 2 weeks (80 hours) and conducted dragonfly surveys, streamside salamander surveys and was involved in the Refuge moss workshop. Additionally, Jones helped enter data and make bait balls for trapping flying squirrels.



Volunteer Chris Jones measures stream salamanders on Idleman's Run – 7/2005 (K.S.)

Two fence removal days were held in 2005. On July 15, RB Sturm and Engineering Equipment Operator Nicely worked with three volunteers to remove a section of hog wire fence from a small woodlot on the Beall Tract. A section of smooth wire was also removed from around the Beall farm pond. The day was cut short by intense lightning storms that moved into Canaan Valley at noon.

The second fence removal day was held on October 18th at the Cooper Tract. RB Sturm, RB Crockett and RB Ceperley worked with volunteers Karen and Bob Yowler to remove wire fence from a pasture on the Cooper Tract. Removing the fence will help reduce field fragmentation for grassland birds as well as eliminate travel corridors for predators.



Lead RB Ken Sturm helps remove old fence on the Beall Tract of the Refuge, near the pond. (7/16/06, JB)



Volunteer and Sierra Club member Paul Wilson helps remove old fence on the Beall Tract (7/16/06, JB)

Volunteers Sara Hunt and Angie Sturm aided RB Sturm and RB Crockett check flying squirrel traps in August. After checking traps the volunteers helped conduct an area search for Cheat Mountain salamanders along Three-Mile Ski Trail. No Cheat Mountain salamanders were detected in this area although the survey found 13 red-backed salamanders (including a nest with 4 young) and 11 mountain dusky salamanders. RB Crockett and RB Sturm checked habitat upslope from Three-Mile trail at the junction of Powderline trail and found one Cheat Mountain salamander within 5 minutes of area searching.

The Refuge sponsored a tree planting day on September 24th. A total of 12 volunteers helped Refuge staff plant trees just north of the Timberline Homeowners Association property. Details are described in section F.3. - Forests.



Volunteers at Refuge spruce planting day 9/24/ 2005 (K.S.)

Volunteer Appreciation

On November 29th, the Refuge hosted its annual Volunteer Appreciation Dinner. Approximately 25 volunteers, staff and family attended. Volunteers received a volunteer lapel pin and either a t-shirt (1 – 50 hours), a fanny pack (50 – 100 hours) or a Jim Clark book (> 100 hours), depending on the number of hours contributed. A good time was had by all. Here are some photos.



A delicious meal was catered by White Grass Catering. (11 / 29 / 05, unknown)



PR Burns presents fanny packs to Adopt a Trail leaders Bruce and Andy Dalton. (11 / 29 / 05, unknown)

Visitor Center Staffing

As the year began, we sought volunteers to staff the visitor center on weekends, and Refuge staff took care of visitors on weekdays. This changed a bit when STEP Dzaack began to help staff the visitor center on approximately half of the weekend days, and some volunteers expressed preference to helping during the week. By years end, we were seeking volunteer help to staff the visitor center on half of the weekend days, and approximately one day per week. Visitor center volunteers include: Nancy and Dave Leshner (Bookstore Managers), Elliott Ours, Vern Patterson, Julie Halverson, Mary Katherine Salovaara, Bill Hibbard, Bruce and Andy Dalton, Carol and Steve Schimpff,

Bob Hardman, and Sharon Pauley. A total of 643.7 volunteer hours were contributed to staffing the Visitor Center in 2005.

Special Events

Date	Event	Volunteers	Total Volunteer Hours
2/2 and 2/16	Shed clean-up, recycling cans	Bill Hibbard, Sherm Jarrett, Andy and Bruce Dalton	10
2/23	Media Day – provided refreshments for our guests and gave presentation about Friends	Nancy and Dave Leshner, Bruce and Andy Dalton and Elliott and Margot Ours	24
3/19 & 20	HOFNOD - exhibit and children's activity at expo. Approx. 1000 visitors were served.	Andy Dalton and Marilyn Shoenfeld	9
4/23	Woodcock Round-up	eight volunteers	20
5/14	Tucker County Migratory Bird Count.	12 volunteers	72
7/16	Remove old fencing	Bob and Karen Yowler, Paul Wilson	7.5
9/24	Spruce restoration and planting	Eleven volunteers	33
9/29	Rail grade walk	Four volunteers	12
10/6-8	Forest Festival Exhibit – Approx. 300 visitors were served.	Bill Hibbard, Sharon Pauley, Nancy Leshner	22
10/18	Remove old fencing	Three volunteers	9

Adopt a Trail

Volunteers Andy and Bruce Dalton, and Bill Hibbard worked to develop and coordinate an Adopt a Trail program for the Refuge as the year began. They divided the trails into manageable sections, determined what the trail tenders would do, developed a manual and training for trail tenders, recruited trail tenders, held two trainings for trail tenders, and took care of their adopted stretch of trail.

On April 30, Volunteers Andy and Bruce Dalton, with assistance from Deputy Manager Holmes and Biologist Sturm, presented Adopt a Trail Training for trail volunteers.

On June 4th, a total of 16 volunteers participated in National Trails Day by working on their adopted stretch of trail. Matt Sherald headed a group of nine Tucker County Trails members working Brown Mountain trail. Dave Saville and two other members of the West Virginia Highlands Conservancy worked the Brown Mountain Overlook trail. Bruce and Andy Dalton did work on their section of the Beall Tract trail. Another group worked off of A-frame Road.

Volunteers Bruce and Andy Dalton led a second training for trail tenders for the Adopt a Trail program. This was for those who had missed the first training. 6 people attended the 5 hour training.

8. Other

Kelly Warren was hired as a contractor to work with the Refuge remote sensing files. The project involved organizing all ArcView projects into one comprehensive filing system on the GIS computer. A total of \$1,300.00 was allocated to fill this contract. All files which are un-used or unnecessary relating to GIS work were deleted. Metadata was developed for all GIS projects as required by Service guidelines. Additionally, all finished projects were copied on to CD and sent to Rick Schauffler (Great Bay NWR) for permanent archiving.

F. Habitat Management

1.General:

RB Ceperley planned and helped conduct a training session on moss identification during July. West Virginia University professor Sue Studler, the state expert for moss identification and ecology, was contracted to teach the class. Biologists from the West Virginia DNR were invited to the workshop that also needed help in moss identification. A total of 12 people attended the two day workshop which was well received by all participants. Moss identification will help biologists conducting plant inventory and classification projects.



Participants of Refuge Moss identification workshop on Herz Tract, CVNWR 7/2005 (S.S.)

RB Ceperley worked to resolve computer problems during part of June. After several visits from Dell certified technicians and replacing the hard drive, processor, mother board and other components, the computer appears to be working properly. RB Ceperley was able to load eCognition and Arc software and began creating polygons to be visited during the summer field season to map Refuge plant communities.

In order to complete the Refuge vegetation mapping project an additional field botanist was hired for the 2005 field season. Paperwork was submitted for approval and advertisement of a contract position on April 19th, 2005. The contract was written to record National Vegetation Classification System (NVCS) plant communities in 900 polygons. A total sum of \$7,000.00 was allocated for this contract. The Refuge received permission from CGS to fill this contract during late May. RB Sturm advertised for this contract and selected Anna Galik for the position. Galik worked as a contract field botanist from June through August.

RB Crockett and RB Sturm worked on identifying plant communities mainly in the south end of the Refuge during August. Loaner Trimble Geo-XT's were obtained through NCTC for this purpose. Hardware problems with one of the Refuge's Geo-XT GPS units required service and repair under warranty. The loss of this Trimble unit caused some delays in completing all the polygons in August. Days without GPS units provided time to begin cleaning the data files and checking for accuracy, in preparation for the data analysis this fall. The field work for this project was completed in early September. The total number of sample sites visited is approximately one thousand during this summer.

Coordination with the regional GIS biologist Rick Schauffler was necessary to begin analyzing data to evaluate statistical significance of similar polygons. Ceperley will travel to Hadley in 2006 to meet with Schauffler to begin this process.

RB Crockett and RB Ceperley spent considerable time mounting plant specimens for the Refuge herbarium. Many specimens had not been mounted for over a year and a large back log existed. In addition Crockett revised and error checked the data base for the herbarium. To date the Refuge has 465 specimens of 295 species. This represents 51% of the known plant species in Canaan Valley.

2. Wetlands:

The Refuge received approval for an Environmental Protection Agency 5-Star wetlands grant and Native Plant Conservation Initiative grant to purchase native red spruce trees for forest restoration purposes. Total funding for the grant is \$12,000.00. The grant would also establish a stable seed source and propagation program with NRCS Plant Materials Center in Alderson and work with local schools and youth groups to plant trees and teach the importance of the red spruce ecosystem. The areas targeted for restoration will include habitats that historically contained red spruce forest or currently are regenerating into spruce.

A meeting was held on April 8th to discuss alder management on the Refuge. Attendance was good and included representatives from West Virginia University, The Nature Conservancy and West Virginia Division of Natural Resources Wildlife Diversity Program. Additionally the FWS Chief of Natural Resources, Joe Dowhan, came down from the Regional Office to attend.

The focus was on the importance of alder harboring a diversity of WV State listed rare plant species as well as its importance as habitat for American woodcock and other migratory bird species. The Refuge is interested in exploring the possibility of cutting older alder stands to regenerate younger stands more suitable for woodcock habitat. However, the Refuge also should protect and enhance (if practical) the alder communities which contain rare plant species. This meeting was organized to discuss these issues and evaluate alder's importance in its association with rare plant species in Canaan Valley. The result of the alder meeting was a list of action items developed to help the Refuge analyze the importance of alder communities for rare plant species and for migratory bird management.

Alder habitat was reviewed on the Refuge this year and locations where dryer alder communities may be established to provide foraging sites for woodcock were identified. In order to propagate alder, cones were collected at three locations on the south end of the Refuge in late October. The seeds will be processed by the NRCS Plant Materials Center in Alderson, WV and propagated for Refuge habitat projects. Funding received from a Challenge Cost Share project with Ruffed Grouse Society will help pay for the alder propagation. An interagency agreement will be developed to allow funds transfer between the USFWS and NRCS to work on this project.

Approximately one acre of alder shrub was cut as an experimental woodcock habitat improvement project. The cut occurred near the "Sinks of Canaan" on the Orders Tract. Funding for the cut was taken from the Ruffed Grouse Society/USFWS Challenge Cost Share grant. The area targeted for cutting was a drier alder site which would support

better earthworm densities and therefore better woodcock foraging habitat than a wet alder site.



RB Sturm at alder regeneration test plot on Orders Tract. 11/2005 (A.W.)

Woodcock biologist Andy Weik was brought to the Refuge in late November to evaluate habitats for woodcock management. Andy and the staff spent three days in the field looking at woodcock habitat, focusing on alder communities at the north and south end of the Valley. Information gathered will help Refuge staff develop management goals for woodcock and early successional song bird habitat. Summary information from the evaluation is recorded below:

Alder Management:

- Alder stands on the Refuge are variable for their suitability for woodcock management by cutting. Many sites are too wet to support abundant earthworms.
- Alder in Canaan is not being encroached by hardwood or mixed conifer hardwood species, therefore there is no rush in cutting alder to perpetuate alder communities.
- Site selection for alder cutting must be conducted in the field rather than by using aerial photos due to the variable nature of soil saturation.
- Suitability for cutting should be conducted during the fall, when sites are the driest and would be used more heavily by the migratory population of woodcock.
- Woodcock likely still use wet alder communities but foraging opportunities would be limited to drier hummock areas.
- Many alder stands are heavily vegetated in the understory by herbaceous plants. Woodcock would likely have difficulty probing through this dense vegetation. Increasing alder canopy may reduce herbaceous ground cover and increase feeding opportunities.
- Cutting small alder stands would be important only if similar small and suitable stands could be cut near by.
- Emphasis on increasing alder on slightly drier sites through planting. Sites to target would be adjacent to existing alder stands and in close proximity to the hardwood toe slope forest and/or other potential nesting and singing ground habitat.

Alder Cutting Process:

- 1). Conduct ground surveys to identify drier alder communities. GPS locations of alder stands. Surveys conducted in the late summer and fall.
- 2). Re-visit sites during the growing season at least once to inventory for rare plant species.
- 3). Develop a ranked “go-no-go” list of rare plants that would help plan when cutting could occur.
- 4). Eliminate sites where rare plants are growing in conjunction with alder.
- 5). Conduct site survey to gather baseline conditions of alder stand prior to cut. Document with photo points.
- 6). Cut alder during fall/winter dormant period. Mow Spirea adjacent to stand if applicable and possible.

Alder Planting Process:

- 1). Identify areas based on soil moisture and earthworm abundance.
- 2). Best sites would be in close proximity to nesting and singing ground habitat.
- 3). Evaluate current habitat for other migratory bird use.
- 4). Plant alder via:
 - Propagation of seeds with NRCS.
 - Scarifying soil with a disc or rake and direct seeding.
 - Investigate alder propagation through stem cutting.

Aspen Management:

- Could be most successful method of establishing dense hardwood habitat for nesting/feeding due to quick growth of suckers post cutting.
- High priority to connect existing fragmented aspen stands.
- Regenerate through cutting either groups or outside edge of larger aspens to encourage patch expansion.
- Explore root raking method of aspen regeneration.

Habitat Summary:

- Most important habitat to focus on at Canaan is development of young dense hardwood stands through even aged stand management.
- Singing ground management is lower priority due to abundant available sites.
- No rush to set back alder due to apparent lack of successional change to forested communities.
- Deer browse limits ability to provide diverse young hardwood stands.
- Monitoring habitat before and after any manipulation will be important. This includes:

- 1). Inventory of earthworm density prior to alder planting or cutting to ensure site will be used by woodcock.
- 2). Plant inventory of understory herbaceous species present and possibly stem density.
- 3). Photo points of any manipulation.
- 4). Use trained bird dogs to determine summer use of habitat by woodcock before and after manipulation.



RB Sturm and Ceperley inspect young growth quaking aspen near Glade Run. 11/2005 (A.W.)

3. Forests

One hundred native balsam fir and 1,500 red spruce trees were planted with volunteer help on the Main Tract just north of the Timberline border and along Idleman's Run. Trees were purchased through a Challenge-Cost Share project with Timberline Homeowners Association. A total of \$2,500.00 was available to purchase trees for restoration and habitat improvement as a result of this project. The seeds for these trees were collected in 2003 on the Refuge and other locations throughout the state in cooperation with the West Virginia Highlands Conservancy. Seeds were shipped to Canada to be grown to a "plug +1" size. The focus was to re-establish spruce as a component of the northern hardwood forest and particularly along a small riparian corridor.

10. Pest Control

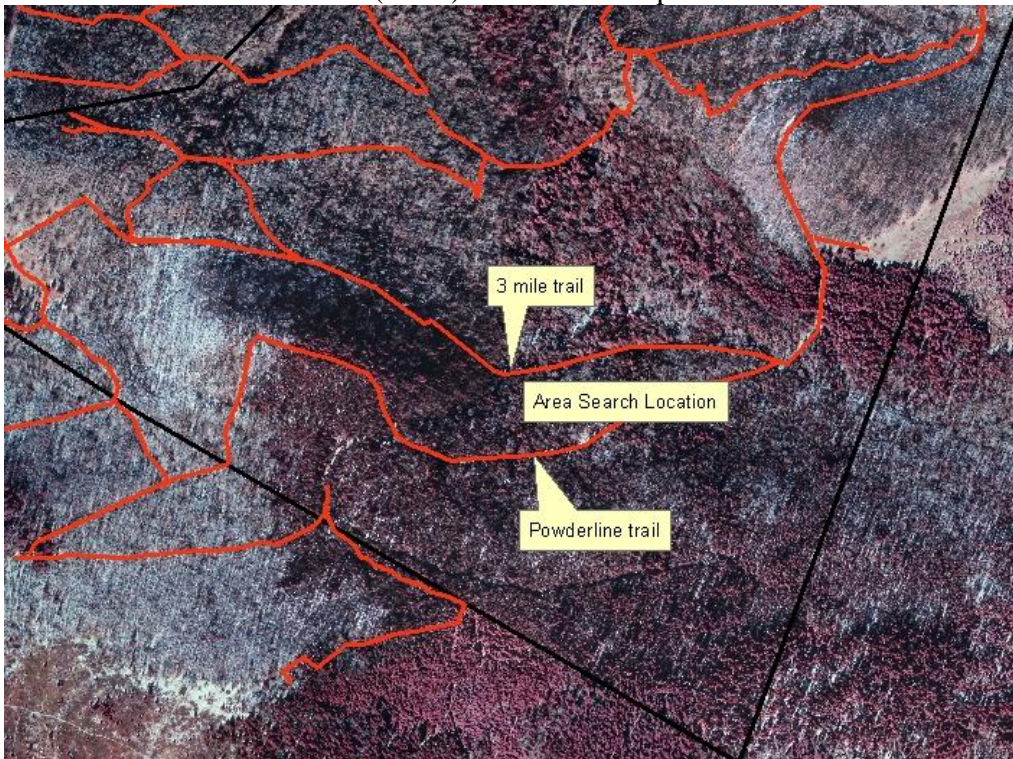
The Refuge treated approximately 15 acres of reed canary grass on the Thompson Tract in early September. Reed canary grass was mowed and then sprayed using a 1% solution of Glypho Plus herbicide. Thompson Tract has become increasingly infested with the exotic reed canary grass which directly limits ground nesting bird species. This field has been successfully managed for bobolink and meadowlark nesting, however increasing canary grass reduces nesting suitability for these species.

Multiflora rose and barberry plants were also treated with Glypro during the 2005 growing season. The Refuge treated approximately 10 acres using a 1% Glypro or Glypro Plus herbicide. Most spraying for these species occurred as spot treatments on Reichle tract (near the handicapped hunting blind) and on Cortland Tract (primarily along road side). These areas will be checked in 2006 to determine effectiveness of the treatment and retreated as necessary.

G. Wildlife

2. Endangered and/or Threatened Species

Refuge biologists conducted threatened Cheat Mountain salamander (*Plethodon nettingi*) surveys during June, July and August. One survey a month focused on the established cover board plots on Cabin Knob and along the Powderline ski trail. Other surveys were an area searches conducted in three locations along Three-mile ski trail and Powderline ski trail. This area was being investigated to evaluate the impact of the cross-country ski trail on habitat fragmentation for the salamander. This area will help define potential research areas for a graduate student project beginning in 2006. The graduate student, Les Dillard, will be working with the Refuge to help evaluate impacts of logging roads on Cheat Mountain salamander (CMS) habitat and dispersal.



South End of Kelly-Elkins Tract where CMS Area Searches Were Conducted – 2005 (K.S.)

Conditions for salamander surveys were generally poor throughout the summer months due to unusually warm and dry weather. One CMS was found on the Cabin Knob coverboard plot B. This was the only CMS found on coverboard surveys in 2005. Only one CMS was found during area searches in the forest habitat between Three-mile Trail and Powderline ski trails. One search in August found a total of 29 salamanders including 18 red backed salamanders (*Plethodon cinereus*) and 11 mountain dusky

salamanders (*Desmognathus ochrophaeus*). A nest of *P. cinereus* were found containing 4 young approximately 1cm in length. No CMS were found in this section for forest. However an area at the junction of Three-Mile Trail and Powderline was checked for CMS and one was found within five minutes of area searching (location NAD 83: N4319055 E 637574.)



Cheat Mountain Salamander (*Plethodon nettingi*) 7/2004 (K.S.)

RB Sturm and RB Crockett worked with the USFS Fernow Experimental Research Station during August to continue work on the endangered WV northern flying squirrel. A total of 91 traps were opened on the Kelly-Elkins Tract in two sets. Fifty traps were set along Powderline Ski trail and 41 were set at the junction of Three-Mile and Powderline ski trails. There were four trap nights during the week of August 21. No squirrels were captured. Traps were disturbed by bears and likely raccoons, rolling the traps, knocking them from trees and in one case bending a trap badly. This area was retrapped during November and December to evaluate the effect of ski trail use and grooming operations on den selection and home range size.

RB Crockett moved squirrel traps down slope on the Kelly-Elkins tract for late fall/early winter trapping. The focus was on the lower Freeland Run drainage centered on the Heartland ski trail. The Freeland Run drainage is thought to provide movement corridors (due to the conifer cover in the riparian area) for flying squirrels. Scheduling conflicts prevented any trapping for endangered WV northern flying squirrels during November or December this year. Trapping to identify winter habitat use and potential behavioral responses to cross-country skiing will continue in January 2006 pending appropriate weather conditions.

RB Crockett conducted Anabat surveys during July and August at the Freeland beaver pond and at the FR 80 Quarry site. The focus for this project was to determine the presence of Indiana bats on the Refuge. This species was found during August of 2003 during Anabat surveys on Freeland and Forest Road 80 by USFS biologists Ford and Rodrigue.

RB Crockett documented little brown myotis (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), Eastern pipistrel (*Pipistrellus subflavus*), red bat (*Lasiurus borealis*) and importantly, Indiana bat (*Myotis sodalis*) during surveys in late summer 2005. This was the second documentation on the Refuge of Indiana bats. Future surveys will occur during spring and summer months in an attempt to document species utilizing the Refuge during the growing season.

RB Sturm submitted reports to the WVDNR and renewed research requests for the endangered WV northern flying squirrel and threatened Cheat Mountain salamanders.

Permits are obtained on a yearly basis from the State to conduct work on these Threatened and Endangered species.

7. Other Migratory Birds

Approximately 12 acres were mowed for woodcock habitat on Reichle and Herz tracts. Equipment Operator Nicely opened up singing ground habitat by mowing encroaching Spirea, St. John's wort and other shrubs. Spiraea/St. John's wort shrub communities were mowed on the Herz Tract during the week of April 11th. Small patches were opened in tall shrub communities adjacent to the Idleman's Run riparian zone which will serve as woodcock singing ground habitat.



New Refuge tractor was used to mow encroaching shrubs to improve singing ground Habitat for American woodcock. 9/2005 (K.S.)

Approximately 17 acres of aspen were cut for woodcock and grouse habitat. Cutting was accomplished through an open bidding process. Low bids were awarded the contract. This project was paid for through the Ruffed Grouse Society Challenge Cost Share grant to help the Refuge manage habitat for early successional wildlife species. A total of 10 acres were cut in fall of 2004 and 7 acres in the spring of 2005. Both cuts were located in the "big aspen" area of the Refuge, north of Blackbear Woods development. Response was checked in July and again in fall of 2005. Most cut sites showed vigorous sprouting with some sprouts measuring over 7 feet tall.



DRM Holmes stands in aspen regeneration site-1st growing season post cut. 9/2005 (K.S.)

The annual migration count was conducted on May 14th this year. This event occurs each year on the second Saturday of May and focuses on counting total numbers of species and individual birds within Tucker County. A total of 96 species and 1,540 individual birds were recorded by 12 volunteer birders. This was an increase from 2004's results where only 89 species were tallied. Many habitats on the Refuge were covered as well as locations in Blackwater Falls SP, Canaan Valley SP and the Fernow Experimental Research Station near Parsons. Sixteen warblers were documented this year, including 8 Canada warblers on the Brown Mountain trail. Monitoring for this species on the Refuge may become important as recent information shows steady population declines throughout its range.

TUCKER COUNTY MIGRATION COUNT

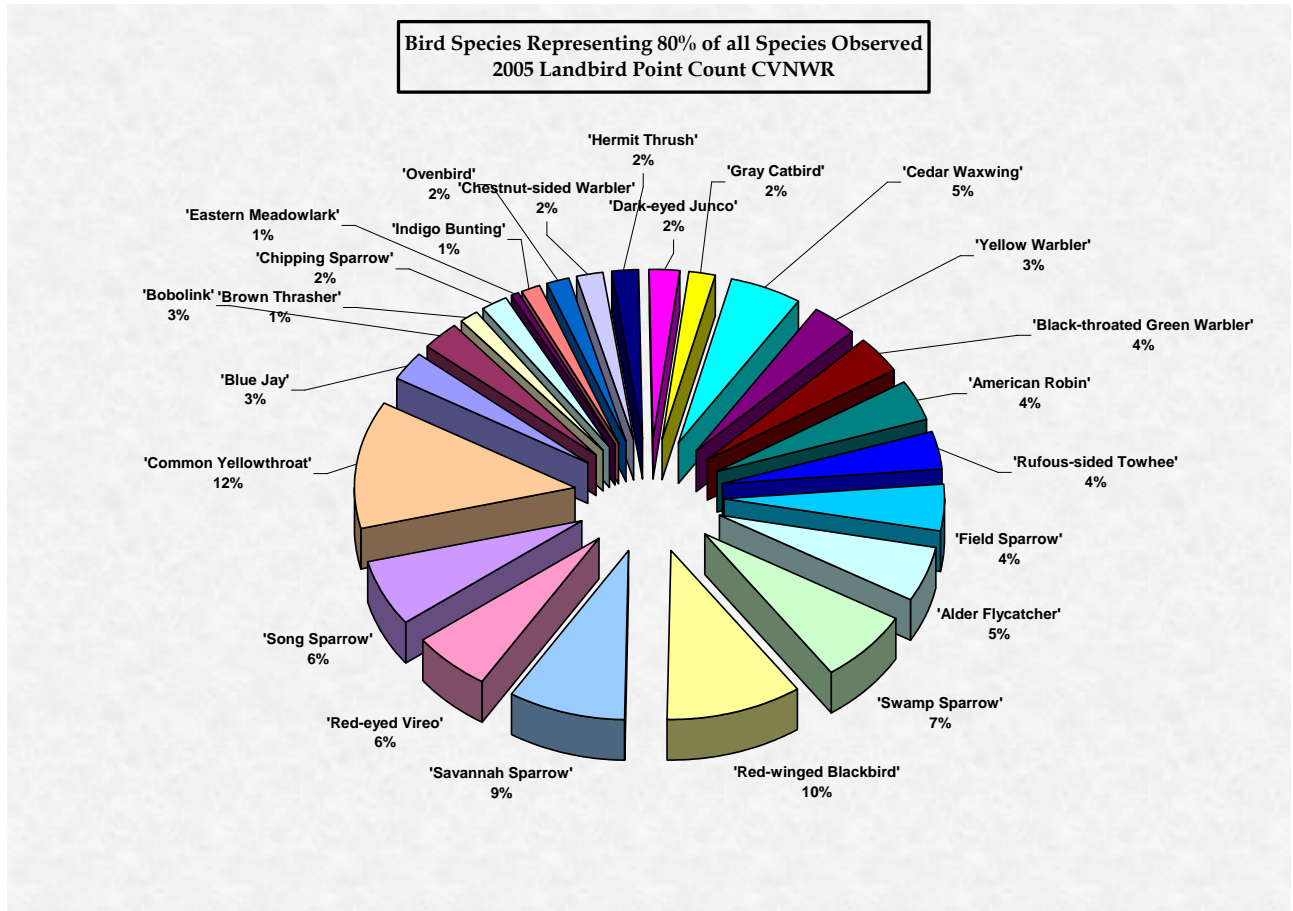
14-May-05

SPECIES	#	SPECIES	#
Great Blue Heron	2	Wood Thrush	5
Canada Goose	16	Hermit Thrush	13
Wood Duck	1	American Robin	84
Mallard	3	Gray Catbird	13
Killdeer	3	Brown Thrasher	4
American Woodcock	1	Cedar Waxwing	4
Turkey Vulture	19	European Starling	27
Cooper's Hawk	1	Red-eyed Vireo	76
Red-Shouldered Hawk	1	Blue-Headed Vireo	30
Broad-winged Hawk	6	Warbling Vireo	2
Red-Tailed Hawk	5	Northern Parula	12
Ruffed Grouse	1	Black-and-White Warbler	4
Mourning Dove	18	Black-throated Blue Warbler	13
Yellow-billed Cuckoo	1	Blackburnian Warbler	12
Black-billed Cuckoo	1	Chestnut-sided Warbler	34
Barred Owl	4	Magnolia Warbler	45
Ruby-throated Hummingbird	6	Yellow-rumped (Myrtle) Warbler	6

Belted Kingfisher	1	Black-throated Green Warbler	108
Northern (Yellow-shafted) Flicker	12	Yellow Warbler	9
Downy Woodpecker	6	Canada Warbler	8
Hairy Woodpecker	5	Hooded Warbler	6
Red-bellied Woodpecker	4	Ovenbird	23
Pileated Woodpecker	10	Northern Waterthrush	1
Eastern Kingbird	2	Louisiana Waterthrush	8
Great Crested Flycatcher	4	Common Yellowthroat	55
Eastern Wood Pewee	1	American Redstart	14
Eastern Phoebe	13	Northern Cardinal	9
Least Flycatcher	24	Indigo Bunting	6
Alder Flycatcher	2	Rufus-sided Towhee	56
Acadian Flycatcher	3	Grasshopper Sparrow	2
Tree Swallow	9	Savannah Sparrow	2
Barn Swallow	19	Song Sparrow	47
Northern Rough-winged swallow	3	Swamp Sparrow	31
Blue Jay	75	Field Sparrow	11
American Crow	40	Chipping Sparrow	44
Common Raven	10	Dark-eyed Junco	30
Tufted Titmouse	5	Bobolink	12
Black-capped Chickadee	54	Eastern Meadowlark	8
Brown Creeper	3	Red-winged Blackbird	63
White-breasted Nuthatch	14	Brown-headed Cowbird	29
Red-breasted Nuthatch	3	Common Grackle	14
House Wren	7	Baltimore Oriole	2
Winter Wren	15	Scarlet Tanager	19
Carolina Wren	2	American Goldfinch	45
Golden-crowned Kinglet	6	Purple Finch	3
Eastern Bluebird	1	House Finch	6
Veery	5	Rose-breasted Grosbeak	31
		English Sparrow	5

RB Sturm completed the annual breeding bird point count survey during the first week of June with the help of volunteer Casey Rucker. A total of 14 transects were covered this year; 11 of which are routes covered every year. The other three transects were included to reincorporate grassland units (Beall, Harper and Freeland) into the yearly point count survey. Grassland surveys had been conducted separately in previous years under the Regional grassland research project. Weather was warmer and drier than normal and all surveys were completed on time. Interesting birds observed were two golden-winged warblers (one at Camp 70 Route A and one at the Glade Run north trail crossing). Additionally, a Nashville warbler and two great crested flycatchers were observed on the Big Cove transect. Unfortunately, no clay-colored sparrows were heard on the Middle Ridge North transect this year. This unusual sparrow species had been documented on the Refuge in 2002, 2003 and 2004.

Common yellowthroats and red-winged blackbirds were again the most commonly observed species on the Refuge in 2005. Five sparrow species (savannah, chipping, swamp, song and field) comprised a total of 28% of all species detected in 2005. Twenty-four species represented 80% of all species detected on point count surveys in 2005



The most abundant bird species documented during 2005 point count surveys

At least five Henslow's sparrows were documented on the Reichle Tract on August 5th by Refuge Volunteer Casey Rucker. The birds were found in the field at the beginning of Forest Road 80. Observations by Refuge staff and birders during August confirmed their continued presence through the month of August within the 34 acre Reichle grassland. This was the first documented occurrence of Henslow's sparrows in Canaan Valley and the only the second site location known in Tucker County. Henslow's Sparrows top the list on the grassland species experiencing the most significant population declines in the east. The Refuge will monitor this grassland during the 2006 breeding season to determine if this species is nesting on the Refuge.

RB Sturm attending the annual Partner's in Flight meeting at the WVDNR operations center in Elkins. Discussions focused on a recent effort by the DNR to develop a list of state sensitive bird species as well as habitat management recommendations. The draft list is available on the DNR website.

A report was given on the Allegheny Front bird banding station this year. No significant "fronts" were observed where large numbers of birds move through in a short period of time this year. However the banding station did capture large numbers of birds that were moving through the area in a steady flow this season. The report will be available on the Brooks Bird Club web site.

RB Sturm coordinated the Christmas Bird Count again this year. The count occurred on December 17th and eight volunteers participated including Refuge employees Sturm, Crockett, Skutek, and Burns. A total of 58 species were documented during this years count, making it the greatest species diversity of any count in the last 10 years. New for the count were American woodcock and hermit thrush seen in Canaan Valley. This information is entered into the Audubon Society web page by RB Sturm each year.

Results of the 2005 Christmas Bird Count: December 17, 2005

Pied-billed grebe	1	Tufted titmouse	59
Black Vulture	19	Red-breasted nuthatch	13
Turkey Vulture	5	White-breasted nuthatch	35
Canada Goose	2	Brown creeper	7
Mallard	15	Winter Wren	1
Bald eagle	1	Carolina Wren	2
Northern harrier	1	Golden -crowned kinglet	16
Sharp-shinned hawk	1	Eastern bluebird	12
Red-shouldered hawk	1	American robin	3
Red-tailed hawk	7	Hermit Thrush	1
Rough-legged hawk	2	Northern Mockingbird	1
Buteo spp.	1	European starling	290
American kestrel	4	Cedar waxwing	3
Ruffed grouse	3	American tree sparrow	9
Wild turkey	23	Fox Sparrow	1
American Woodcock	2	Song sparrow	26
Rock Dove	59	Swamp sparrow	1
Mourning dove	77	White-throated sparrow	8
Belted Kingfisher	3	Field Sparrow	3
Red-bellied woodpecker	3	Sparrow spp.	21
Yellow-bellied sapsucker	2	Brown-headed Cowbird	1
Downy woodpecker	21	Red-Winged blackbird	5
Hairy woodpecker	15	Rusty Blackbird	1
Northern flicker	1	Dark-eyed junco	167
Pileated woodpecker	4	Northern Cardinal	11
Woodpecker spp.	1	Evening Grosbeak	12
Blue jay	104	American Goldfinch	38
American crow	191	Purple Finch	8
Common raven	116	House Finch	70
Black-capped chickadee	195	House Sparrow	44
		Red Crossbill	2

RB Sturm conducted the fifth annual “Woodcock Roundup” on April 23rd. A total of 8 volunteers participated in this year’s volunteer survey. Weather conditions were not favorable with strong winds and snow showers throughout the survey period. Nonetheless a total of 12 woodcock were recorded but only from two routes: Timberline Road and South Cortland Road. The other five routes covered did not document calling woodcock, likely due to adverse weather conditions.

10. Other Resident Wildlife

The Refuge conducted spring vernal pool surveys this month. Volunteers Alex and Mary Ann Honcharik helped the biology staff on this project by visiting several defined survey points looking for vernal pools and breeding spotted salamanders and wood frogs. A total of 28 points were visited by Refuge staff (RB Ceperley and RB Sturm) and volunteers. Data was compiled and submitted to U.S. Geological Survey. Pools identified during surveys in 2004 and 2005 will be used as long term monitoring sites for amphibian nesting on the Refuge.

Results from surveys conducted in 2004 and 2005 are below. The proportion of pools occupied by each species (wood frogs and spotted salamanders) was estimated of all pools identified. It was estimated that 65% of all pools identified were occupied by wood frogs and 73% were occupied by spotted salamanders. Estimates were generated by USGS from field observations by Refuge staff.

Adaptive Cluster Sample (ACS) results for number of points surveyed and number of pools found which were occupied by both wood frog and spotted salamanders in 2004 and 2005, CVNWR.

Years surveyed	# ACS Points where pools found	# Pools	Total ACS	% ACS Points	Known Pools Surveyed	ACS Pools Surveyed	INCIDENTAL	total pools
		Found at	Points	Surveyed				
		ACS Points	to date					
2004-2005	4	23	94	59%	4	23	54	81

RB Sturm, DRM Holmes, PR Burns and STEP Dzaack attended a dragonfly survey workshop at the WVDNR office in Elkins in June. The purpose of the workshop was to train volunteers to conduct dragonfly surveys in support of a state wide atlas project. The Refuge conducted dragonfly surveys at Freeland, Beall tracts this season. Most of the field work and identification was conducted by STEP Dzaack. RB Sturm collected the first round of specimens at Beall and Freeland during June. Other specimens were captured by STEP Dzaack at the Beall Pond.

To date a total of 30 dragonfly and damselfly specimens of 13 species have been collected on the Refuge. RB Sturm completed all paper work and delivered the first round of specimens to the West Virginia DNR dragonfly atlas coordinator this month. Refuge staff plan on continuing the project during the 2006 field season. One result of this project will be a Refuge specific checklist for dragon and damselflies made available at the Visitor's Center.

RB Sturm, RB Crockett and volunteer Chris Jones conducted the annual stream side salamander surveys on the Refuge in July. This project is a joint effort with USGS and involves other Refuges and at least one National Park in the north east. Set up as a long term monitoring project, biologists survey different sections of low order streams to develop population models and species diversity information. Surveys on Canaan Valley NWR typically require three days to complete and take place in July every year. This was the fourth year of a proposed ten year inventory and monitoring project. Data is submitted to USGS scientists who compile and report on the information collected.



Northern Spring Salamander Larvae Captured on Stream Salamander Survey – 7/2005 (K.S.)

11. Fisheries Resources

RM Skutek, DRM Holmes and RB Sturm met with Timberline Homeowners representatives Sherm Jarrett and Bill Reily to discuss brook trout habitat improvement. Reily was concerned that habitat had been degraded on Yocum Run which begins on Timberline property and flows through the Refuge before entering the Blackwater River near the Beall Tract. In particular, stream habitat has apparently become braded and not suitable for brook trout on the section of Yocum Run which flows through the Herz Tract. Reily will contact the State DNR to inquire about a survey for habitat suitability along Yocum Run as well as information on habitat restoration.

16. Marking and Banding

RB Sturm worked with Forest Service Research Biologists Rodrigue to continue a grassland bird banding research project on the Refuge. Banding activities focused on the Beall, Thompson, and Freeland Tracts during June. Rodrigue banded 12 birds during June: 5 bobolink, 3 Eastern meadowlark and 4 grasshopper sparrows. RB Sturm will be meeting with Rodrigue in early 2006 to discuss the banding results from the past two field seasons and plan any future banding and relocating efforts for next season.



Eastern meadowlark banded at Beall Tract 6/2005 (J.R.)

H. Public Use

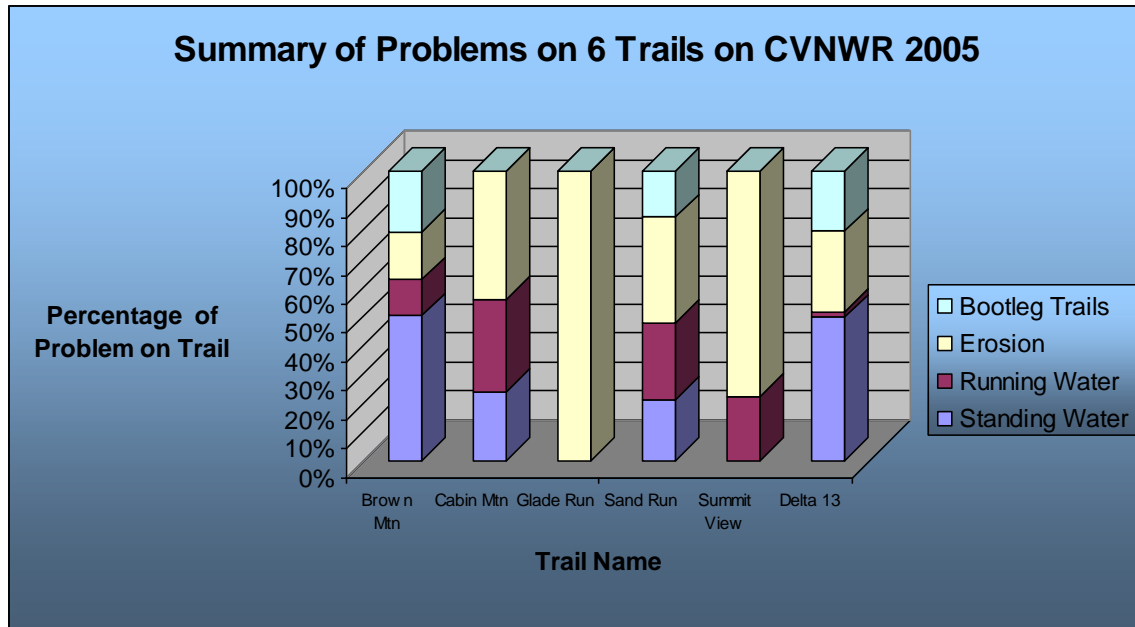
2. Outdoor Classrooms

RB Sturm met with students from Potomac Community College from Pennsylvania again for the third year. Students were given a presentation on the Canaan Valley and the U.S. Fish and Wildlife Service Refuge System as well as balsam fir ecology. Students then participated in a balsam wooly adelgid survey of the Freeland Tract. Information was gathered by students and will be summarized by the biological staff to compare the rates of adelgid infestation with previous years.

4. Interpretive Foot Trails

RB Sturm trained intern Liz Salsbury to begin a trail monitoring project in July. Salsbury conducted the survey using protocol developed in 2002. The survey was initiated in 2002 to evaluate current trail conditions and sustainability of proposed public uses on Refuge trails. Monitoring helps the Refuge evaluate the trail conditions, suitability of public use methods on trails and locations for trail work projects.

Salsbury worked on the trail project for five weeks beginning in July was paid a stipend of \$100.00/week. She completed the trail survey and submitted a final report to the RB Sturm at the end of her internship. This information was compared to data collected in 2002, the first summer these trails were opened for public use on the Refuge following completion of Compatibility Determinations. Monitoring trail condition will be important to ensure that proposed public uses remain compatible with Refuge purposes of protecting wildlife and wetland habitat.



Trail problems documented during 2006 survey by Liz Salisbury. Erosion is still one of the biggest problems on Refuge trails.

Salisbury noted that erosion continues to be one of the worst impacts occurring on Refuge public use trails. Standing water was also a significant problem on Delta 13 and Brown Mountain trails which also had the greatest number of bootleg trails. Fixing water problems should alleviate both bootleg trails and erosion problems on most Refuge trails.

RB Sturm, DRM Holmes and RM Skutek met with Elliot Ours (Friends Group president) to discuss public use trails. Ours was interested in contracting the International Mountain Bike Association to evaluate public use trail development on the Refuge. Staff explained the process involved in establishing Refuge trails and how the upcoming CCP will deal with proposed trails. Agreement was tentatively reached that the IMBA could be contacted to provide technical expertise on improving existing open trails to prevent erosion and degradation so that they may remain compatible.

7. Other Interpretive Programs

RB Sturm gave a presentation to junior and seniors at Davis and Elkins College on April 18th. The presentation was requested by the biology professor and discussed the biology and politics of water allocation in the desert south west; specifically as it relates the health of the Salton Sea and the Sonny Bono Salton Sea NWR. A total of 28 students attended the presentation. A second presentation on this subject was given to Davis and Elkins College Seniors' environmental toxicology course in November.

On September 13th, RB Sturm gave a presentation to the Morgantown Audubon Society. The program included an overview of the Canaan Valley, development of the Refuge and examples of Refuge biological programs. This was the first formal presentation by Refuge Staff for this chapter of the Audubon Society. 12 people attended.

RB Sturm and PR Burns conducted a tour of a degraded rail grade for Refuge volunteers. This tour was requested by various volunteers working the visitor's center so that they may answer questions concerning how the Refuge designates trails for public use. The tour began at the Swinging Bridge over the Blackwater River and continued to Jack Neal's Ford on the Blackwater River. RB Sturm discussed the development of the Refuge Trail System in 2001 and the criteria used to designate compatible trails.

RB Sturm and RB Crockett helped Ryan Hagerty (NCTC) film Refuge habitats for the new video being developed for the Visitor's Center. Hagerty was taken on the Camp 70 and Brown Mountain overlook trails for panorama shots and beaver pond close-ups.

RB Crockett and RB Sturm helped staff the Refuge booth at the Elkins Forest Festival this year.

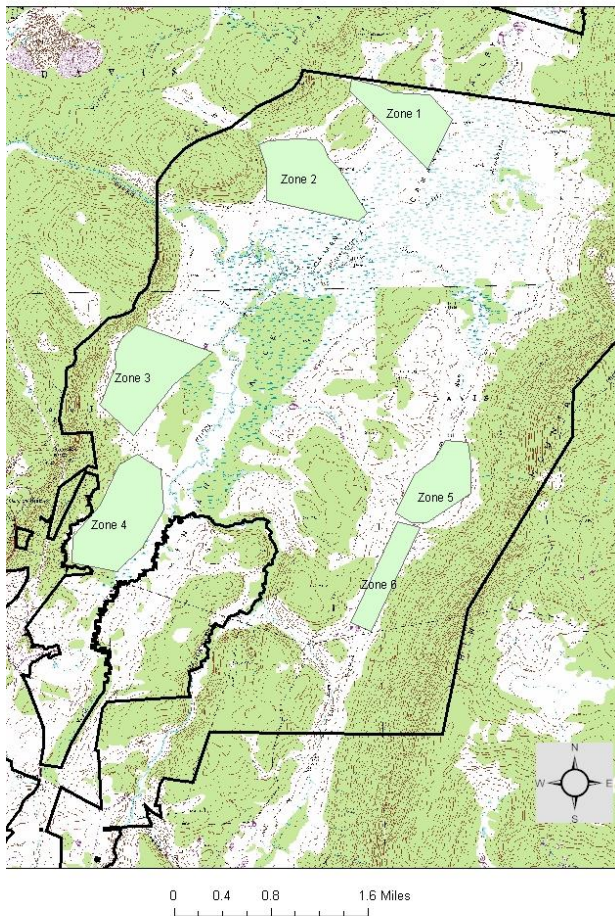
RB Crockett and RB Sturm gave a presentation to the Southern Regional State Parks Naturalists meeting at Blackwater Falls State Park. The presentation was on December 7th with approximately 40 in attendance. A general Refuge overview was presented by Crockett along with recent Refuge accomplishments and a spruce restoration presentation by Sturm.

10. Trapping:

Five trapping survey reports have been submitted to date for the 2004 trapping season. Based on these reports a total of 33 beaver were removed from the Refuge this winter. Sexes of trapped beaver were reported as 19 male and 14 female. Comments on submitted reports are favorable and appreciative of being able to participate in the Refuge trapping program.

A total of 6 trapping zones were designated in 2005. All zones were located in the Main Tract and all but one was requested by trappers during the 2005 season. Results will be analyzed along with field reconnaissance during the summer of 2006 to determine what if any zones will be open for trapping next season.

CVNWR Beaver Trapping Zone 1
2005



11. Law Enforcement

Partnerships and Meetings

In order to effectively administer a Refuge law enforcement program, it is important to develop and maintain partnerships with federal, state and local law enforcement agencies. Throughout the year, Law Enforcement Officer (LEO) Starcher attended meetings of the WV Office of Emergency Services as well as meetings with the WV State Police (WVSP), the West Virginia Department of Natural Resources (WVDNR), the Tucker County Sheriff's Office (TCSO) and the Parson's Police Department. Joint patrol efforts were also conducted with the WVDNR and the WVSP during the early trout season and assistance was provided with several vehicle accidents on State Route 32.

Several meetings with WVSP and TCSO were conducted to discuss narcotics investigations along with several suspicious person incidents that have occurred and with WVDNR to investigate illegal bait sites on the Refuge. Additional investigations involving All-Terrain vehicle (ATV) trespass, fishing, hunting and various other violations were also discussed. Various meetings with USFWS, ORLE, Zone Law Enforcement Officer (ZLEO) Dave Nicely, DiJon Jones, Gary Andres and Refuge 5 Law Enforcement Chief (R5LEC) Tom Goettel were conducted. The continuous efforts to

transfer USFWS, ORLE surplus weapons over to WVDNR LE Section, were conducted with WVDNR Conservation Officer (CO) Troy Weber, and ZLEO Nicely. Additional phone conferences with United States Forest Service (USFS) LEO Frazier and Simon were made to discuss local issues, such as the Rainbow Coalition gathering, Dolly Sods Wilderness Trespass, illegal dumping, ATV trespass and training opportunities.

Investigations

Investigations that were conducted on the Refuge included but were not limited to: motor vehicle violations, narcotics, abandoned vehicle, warrant service, litter, vehicle trespass, snowmobile trespass, hiking/skiing/snowshoeing in an unauthorized area, over the creel limit trout fishing, wildlife baiting, overnight parking, illegal camping, and dogs off leash.

In March, an unattended death occurred on the Whitegrass section of the Reichle Tract of the Refuge. The Tucker County Coroner's report listed the cause of death to be a heart attack.

Methamphetamine, marijuana, and cocaine investigations with the WVSP, TCSO, the Tucker County Prosecutor's Office (TCPO), and the Assistant United States Attorney (AUSA) occurred during the year.

A national gathering of the Rainbow Coalition occurred on the Cranberry Glades area of the Monongahela National Forest (MNF) in Randolph and Pocahontas counties. LEO Starcher assisted MNF officers during this event and contacted several Coalition members on the Refuge.

In September, marijuana investigations with U.S. Forest Service Law Enforcement and Investigations (USFSLE&I), Drug Enforcement Administration (DEA), WVDNR, WVSP, TCSO, TCPO and the AUSA concluded with the eradication of over 500 plants and the seizure of over \$10,000.00 U.S. Currency.

Cross country skiing off of designated trails continue to be a topic of concern for the Refuge and for several members of the community. LEO Starcher, LEO Hartwig, Refuge Manager (RM) Skutnek and Deputy Refuge Manager (DRM) Holmes met with Chip Chase of Whitegrass Ski Touring Center in an effort to express concerns with the skiing program at Whitegrass and continue with the partnership. In addition, a brochure box was placed on the kiosk at the base of three-mile trail to allow skiers access to Refuge brochures.

Law Enforcement Outreach

A USFWS Refuge Law Enforcement program was conducted at the Davis & Elkins College that focused on specific Law Enforcement careers within the Service. Twenty-four students of the College's Criminal Justice Program were in attendance.

Law Enforcement Court/Notice of Violations/Notice of Warning

In May, camping and unauthorized overnight parking violation notices were issued on A-Frame road and on Forest Service Road 80. Violation notices were also issued for illegal ATV trespass on the Delta 13 trail. While interviewing the Defendant he was asked why he rode his ATV around the sign and he stated "Just lazy".

Other violation notices and/or notices of warning issued were for failure to use seatbelts, horseback riding off trails, skiing off trails, uncased guns, hunting over illegal bait, DUI, driving on suspended license, snowmobile trespass, hunting without hunter safety card, hunting from permanent structure, use of flagging to mark trails, mountain biking in unauthorized area, and hunting with revoked license.

I. Equipment and Facilities

1. New Construction

Through most of the year, the Refuge has been struggling to complete the Maintenance Facility, a project that was initiated in 2003 and has been perpetually behind schedule. Troubles and issues with Engineering and contractors have plagued this project since its inception. In late 2004, the contractor, Casey's Electric of Elkins, WV, erected the red iron structures, but failed to follow blueprints and codes. Photographs of the support structures provided to Regional Engineer Kevin Jacobs by E.E.O. Tom Gardner resulted in an order to tear down the iron and start again. We were given a new completion date of June 2005.



Maintenance Building – red iron supports re-erected (1/4/06, S.S.)

In April, 2005, construction re-started and the red iron supports were put up again. On June 7th, RM Skutek, DRM Holmes, and EEO Nicely met with Futron representatives (Gene Miller and Rick Karabin) to discuss the issues and problems and to set a new schedule. An on-site overseer was provided by Futron Company to facilitate the project and resolve issues as they arose. Dealing with Futron and Mr. Casey has been frustrating due to the many delays and excuses as to why things were not getting done. We were given another completion date of September 1, 2005. The project was finally completed and we began occupation of the building in December.

On April 18th, Regional Office (R.O.) Engineer, Kevin Jacobs and RM Skutek met with Tucker County Sanitarian, James Snyder to inspect the septic system and drain field site for the to-be-built Refuge residence (LE house) on Freeland Road. Jacobs and RM Skutek set flags outlining the drain field and the corners of the house site. Following that visit, R.O. Archaeologist Victoria Jacobsen, with staff assistance, completed cultural resource surveys at the LE house site on Freeland Road. No artifacts were found and clearance was given to proceed.

7/13- RM Skutek, met with West Virginia paving (John Ledden) and FHWA (Nelson Clark) to review repairs of seep area in main parking lot. An area of about 3ft wide and 100 ft long was excavated and stone and pipe were installed to facilitate drainage. So far the repair is working. We also inspected a suspected leak and subsidence on the twin

culverts on Forest Road-80. It was determined that the separation was not serious and the culvert should function normally. R.O. Engineer Jim McPherson later inspected the culverts and felt that this may be a problem in the future and should be monitored for sinkholes in the road centerline at the culvert joint.



Parking lot repairs (9/27/05, S.S.)



Parking lot repairs (9/27/05, S.S.)



Parking lot repairs (9/27/05, S.S.)

2. Rehabilitation

The project to repair the lower 5 miles (Refuge part) of A-Frame Road was started on June 1. The project included grading, surfacing, ditch cleaning and renovation, tree removal, and placing of 50 culverts. The project was completed in August at a cost of \$360,000. A.L.L Construction of Mount Storm, WV was the contractor.



A-Frame Road rehabilitation (9/27/05, J.N.)



A-Frame Road after rehabilitation (9/27/05, J.N.)

In October, new carpet was installed in the Visitor Center and Conference Room and the walls were painted in the Visitor Center.

8. Other

RM Skutek responded to the West Virginia Department of Environmental Protection (WVDEP) on code violations concerning high Biological Oxygen Demand (BOD) levels in the wastewater settling pond. Keith Teter, our facility operator provided information and a recommended course of action that would reduce BOD to acceptable levels. A biological agent, Microbe lift was introduced into the finishing pond. We are awaiting response from DEP.

J. Other Items

1. Cooperative Programs

PR Burns attended several monthly meetings of Tucker County Connections. The Refuge helped with the annual 5th Grade Connections program. RB Crockett led a walk and presented a program for the students in September.

On April 8, PR Burns attended a stakeholder's meeting for the Appalachian Forest Heritage Area. This is a multi-county initiative for promoting tourism related to forestry, natural and cultural history in the highlands of Maryland and West Virginia. We learned a bit about what tourists are seeking here, and worked on choosing a slogan and logo. PR Burns is also on their Interpretation committee.

3. Items of Interest

In January, RM Skutek and DRM Holmes attended a Tucker County public meeting in Thomas, WV. The meeting took place to garner support for a petition that would stop government land acquisitions in the County. An article appeared in the Parsons Advocate, a local newspaper.

On March 8th, RM Skutek visited Capitol Hill to update Congressman Mollohan's Office (Angela Ohm) on Refuge activities and events.

As part of the Pendleton and Tucker County Tourist Advisory Committee, RM Skutek coordinated with WV Department of Highways on finalizing the production of Refuge directional signs. Refuge signs fit the format of other State tourism signs and consist of white letters on a blue background. Signs incorporate the words "VISITOR



Directional sign at Rt. 32 and Freeland Road (1/13/2006, J.S.)

ACTIVITIES" and read "NATIONAL WILDLIFE REFUGE-TRAILHEAD". The signs were placed in September at the following locations: WV HWY 93 and A-Frame Rd., WV 32 and Camp 70 Rd., Cortland and Old Timberline Rd., WV 32 and Cortland Rd., and WV 32 and Freeland Rd. RM Skutek continues to participate on the Advisory Committee.

RM Skutek, DRM Holmes, and EEO Nicely have been working with Dan Wheeler and Jim Rawson of Canaan Valley Institute (CVI) on a cooperative project to place a bridge across the Blackwater River near the Camp 70 Road parking lot. This bridge may eventually replace the existing swinging bridge located a short distance up river from the new bridge site. CVI will purchase and place the bridge and the Refuge will create 0.2 mile of road as the approach to the bridge. In addition, the Refuge will upgrade 0.8 mile of existing road that will connect with the approach section. Part of this road is the

Refuge's Swinging Bridge Trail. This bridge will be open to foot, bicycle and horseback public use and will also accommodate emergency and administrative vehicles and provide access for CVI to their property west of the Refuge. The bridge will also provide emergency and administrative vehicle access to Refuge lands off of the Swinging Bridge Trail. The Refuge received \$120,000 MMS funding which was later replaced with Federal Highway funds. We anticipate starting the project in Spring of 2006. Some of these funds may be used to expand the Camp 70 Parking lot and improve a small existing trail to the old Swinging Bridge.

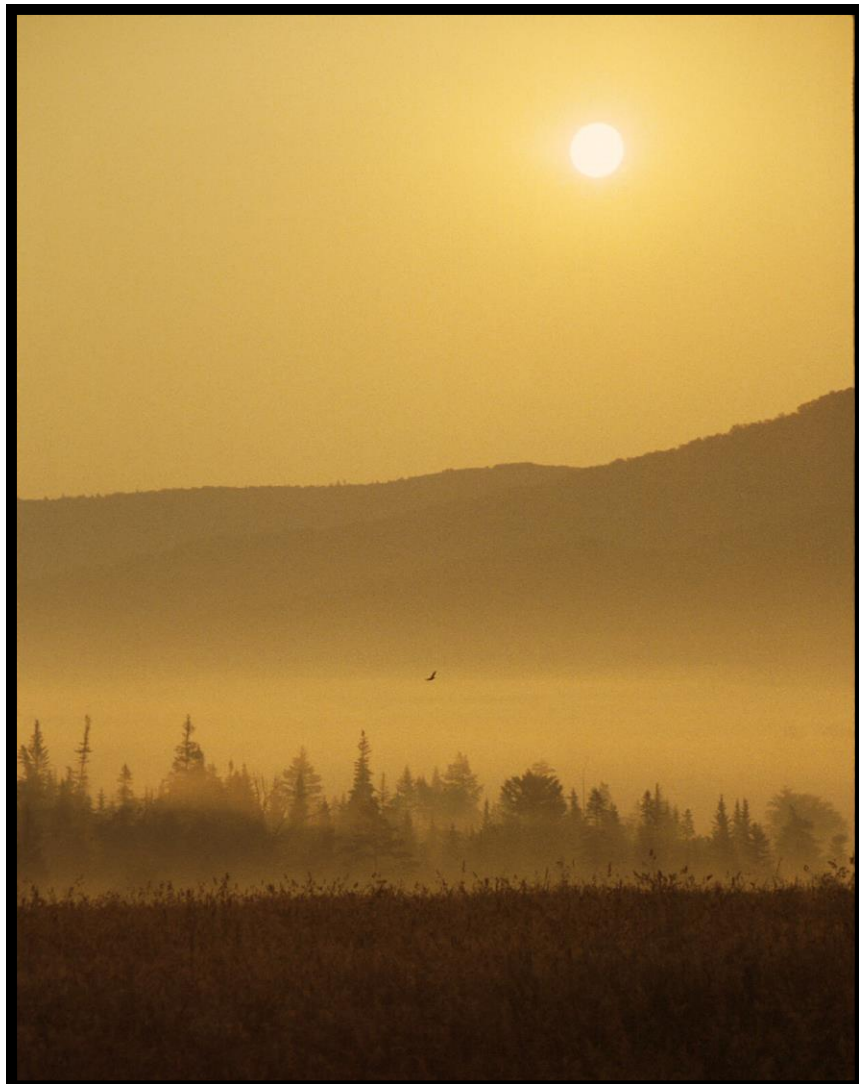
On October 1st, the Refuge attended the 2005 Nature Conservancy Annual Meeting of the West Virginia Chapter at Canaan Valley State Park. The Refuge was presented an award "The Annual Conservation Award for Outstanding Partner Organization", in recognition of efforts to conserve the wetlands of the Canaan Valley. This award came about from the U.S. Fish and Wildlife Service purchase of 486 acres along the North Branch of the Blackwater River in the heart of Canaan Valley. Following the presentation of the award, several field trips were arranged to tour the Refuge. One field trip occurred along Camp 70 and another went to the North Branch Wetlands to visit the property that was purchased, known as the Orders Tract. Before the walk around the Orders Tract to view the wetlands, there was a dedication to the Topping family. The Topping Family donated money for the preservation of this tract and that generosity allowed the Nature Conservancy to contribute to the purchase of the Orders Tract. A plaque was presented to a representative of the Topping Family that will be displayed in the Refuge Visitors Center.



DRM Holmes accepts an award on behalf of the Refuge from Rodney Bartgis, State of the Nature Conservancy, (10/05, E.H.).

4. Credits

<u>Section</u>	<u>Author(s)</u>
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C-Land Acquisition	S. Skutek
D-Planning	K. Sturm, S. Skutek, E. Holmes
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F-Habitat Management	K. Sturm
G-Wildlife	K. Sturm
H-Public Use	J. Burns, E. Holmes, K. Sturm, S. Skutek
I-Equipment and Facilities	E. Holmes, S. Skutek
J-Other Items	E. Holmes, S. Skutek
Editing and Compiling	E. Holmes



Morning at Freeland (K.S.).